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Polycyclic aromatic hydrocarbons and heavy metals in food cultivars from three selected communities of the Niger Delta oil basin in Bayelsa State, Nigeria

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The most profound and adverse impact of oil prospecting and drilling in the Niger delta region of Nigeria is environmental pollution resulting from episodic oil spills with far reaching implications on all other aspects of traditional lifestyles and livelihood of the people. Among the challenges of oil pollution is the total loss of biodiversity and destruction of habitats largely due to soil degradation and persistence of recalcitrant hydrocarbon constituents in water bodies, soil and food cultivars. Most of the recalcitrant hydrocarbon constituents and the accompanying heavy metal pollutants are taken up by food cultivars which as primary producers introduce them into the food chain making these foods the major source of endogenous hydrocarbons among the inhabitants. This study identifies and documents recalcitrant hydrocarbon fractions that are preponderant in the soil and food cultivars of three selected communities, Angiama, Oporoma and Yenagoa (all in Bayelsa State). Hydrocarbon constituents in soil and food crop samples were determined using GC/MS while heavy metals were determined using AAS. Data obtained were subjected to one-way analysis of variance using SPSS software version 17.0 as well as correlation analysis. The results revealed that the long chain hydrocarbons like fluoranthene, pyrene, benzo(a)anthracene, benzo(k)fluoranthane and benzo(a)pyrene are in all instances the more preponderant recalcitrant constituents compared with the short chain hydrocarbons. There was a positive correlation between residual concentrations of hydrocarbons in soils and the food cultivars. All leafy vegetables contained higher values of PAHs than the tubers. Heavy metal contaminants followed the same pattern. The public health implications of these findings are obvious.

Biography

Francis C. Ezeonu holds a Ph.D. in Applied Biochemistry from the Nnamdi Azikiwe University, Awka, Nigeria where he currently teaches. He is presently a Professor of Environmental Biochemistry & Toxicology and has published over 25 papers in reputed journals world over especially in the area of exposure and toxicity assessment. He was appointed member of the Joint FAO/WHO Independent International Expert on Bisphenol A, in 2010.

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